

CS248 Video Game Help Session

A primer on game development

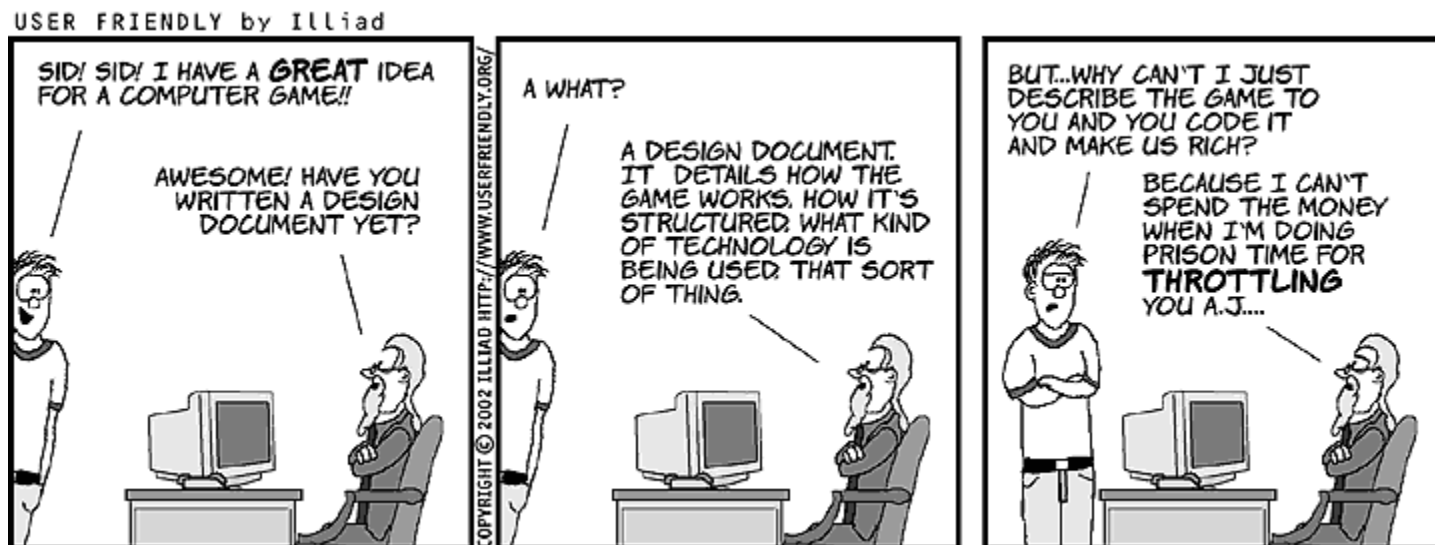
CS248 Introduction to Computer Graphics
Georg Petschnigg, Stanford University
November 7, 2002

Logistic and Scope

- Today's session focuses on assignment requirements, game design and the lessons from the past
- Tomorrow's OpenGL helps session with Zak will focused on coding details
- Please, please, ask questions any time

Welcome to your Game

- This session should help you with your game
- I am not a game design professional – can only share suggestions/experiences
- Ask lots of questions to help guide this talk



Proposed Overview

- Requirements & Deliverables
- Building a Team
- Finding Game Ideas
- Lessons from the Past
- Question and Answers

Game Requirements

- **3D viewing and objects**
 - Your game environment must be a scene consisting primarily of 3D elements
- **User input**
 - Your game must allow players to interact with the game via keyboard or mouse controls
- **Lighting and smooth shading**
 - Your game must contain at least some objects that are "lit".
- **Texture mapping**
 - You must implement texture mapping for at least one of the 3D objects in your video game
- **2 * NumberOfTeamMembers Advanced features**
 - Advanced Feature ~ student-week's worth of effort for each advanced feature

Minimum Game Example

Rescue Dog Max

- Help rescue dog Max find avalanche victims
- Max runs around on a white plane with trees and boulders, “Arrows” control direction, “space” to dig
- The boulders are lit by a directional light
- Scene has a a “snow and tree” texture map
- 3D sound used to locate covered victims
- Particle Engine used to generate falling snow effect

Deliverables

- Game Proposal
 - Tuesday, November 12 at 2:00pm
- First Demos
 - Monday November 18
- Final Demo
 - Wednesday December 4
- Video Game Competition (optional),
 - Wednesday December 4 @ 4pm
 - Webpage for Game
- Final Writeup
 - Friday December 6 @ 5pm

Game Proposal

- Most important document to write
- Tool to help you, your team and the staff to plan, think through and shape your work



Source: <http://ars.userfriendly.org/cartoons/?id=20020904&mode=classic>

Game Proposal Outline

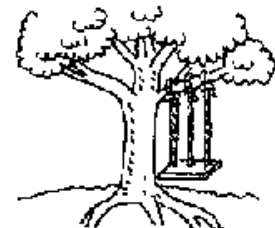
- **Game Name**
 - Your Game Name and a “Tagline”
- **Team Members**
 - Everyone on your team, emails and primary contact
- **Game Premise**
 - “Elevator-spiel” one paragraph describing the game
- **Mock-Screenshot**
 - Create an image of your 3D world using any tool you want
- **Gameplay**
- **3D World and Interaction Mechanics**
- **2 * N Features – see email**
- **Special Ideas and tools you may need**

Goals for your Game Proposal

- Staff asks only for a 1 page Game Proposal
- The goal is to get your team talking and envisioning your game
- Could every team member explain a full “gaming” session?
- Talk now, use pen and paper - ask yourself what you would do if you had 5000+ lines of code that don't do the right thing...



1. As Management Requested It



2. As Specified in the Project Request



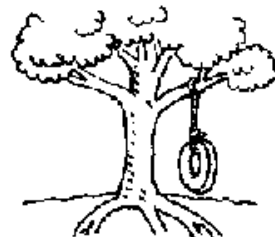
3. As Designed By The Senior Analyst



4. As Produced By The Programmers

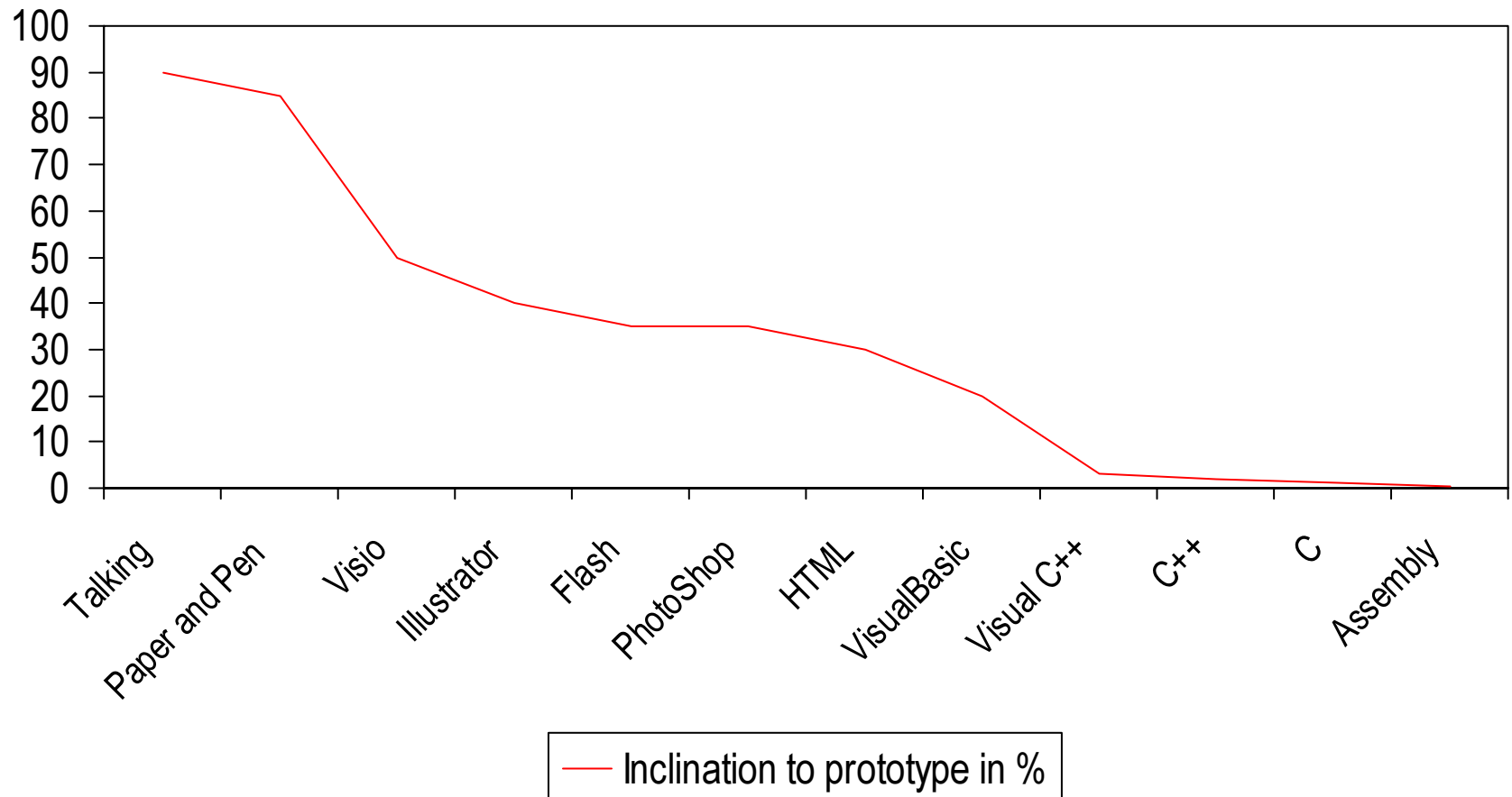


5. As Installed



6. What The User Wanted

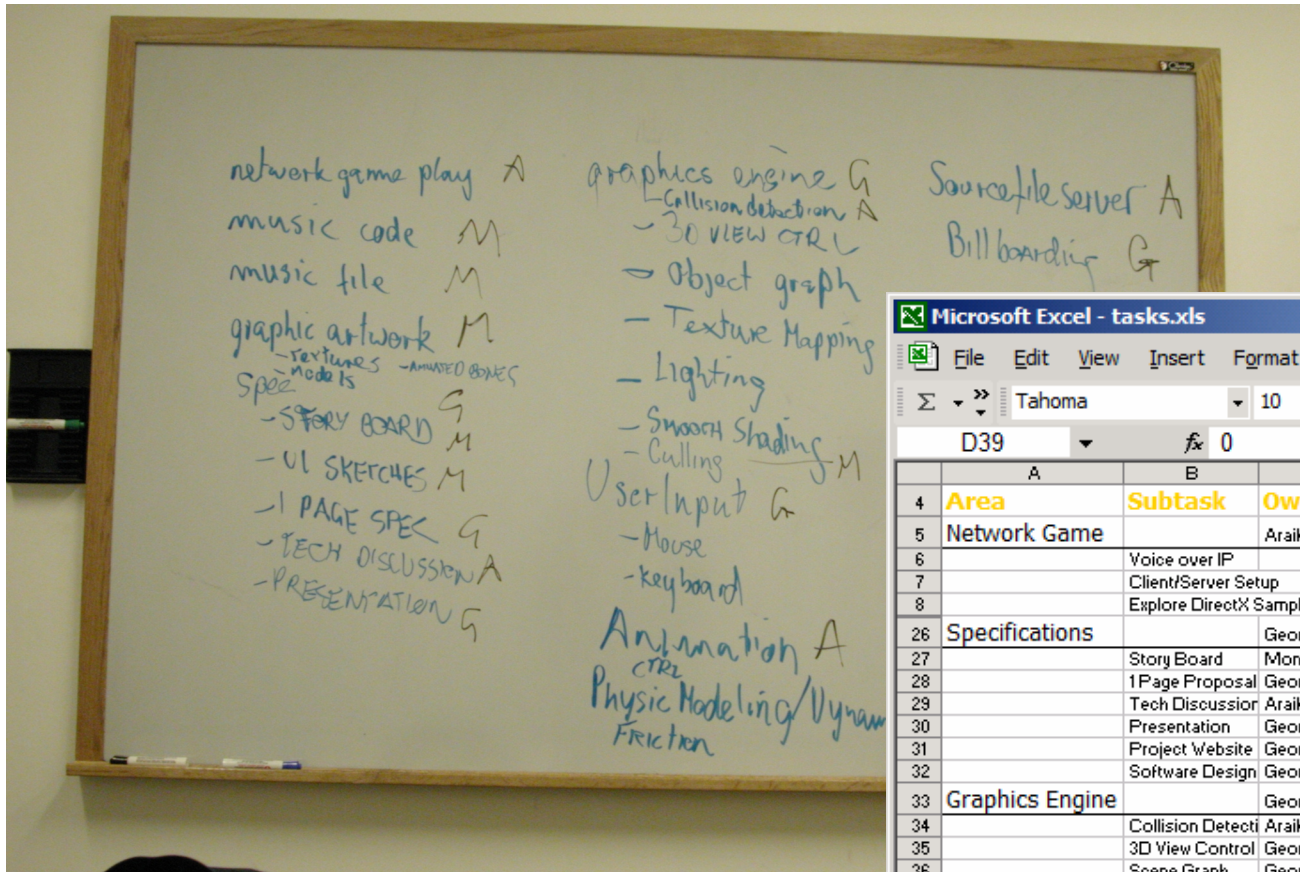
Prototype Tools vs. Flexibility



Auxiliary Documents

Strongly consider creating these documents as well:

- Storyboard
 - “Comicbook” of your game in action – this is a tool, not an art piece focus on important screens (start, end, game over, win!, etc.), use of graphics advanced features, and interaction
- Task list
 - List of work items, **priorities**, time estimates and owners
 - Priorities should be: Must Have, Priority 1, Priority 2, CUT
- Schedule
 - High level calendar when/what should be done, constraints your teammates may have
- Content/Artwork Map
 - List of 3D models, textures and images you think you need and where you will get them from
http://www.gamasutra.com/features/20020903/london_01.htm



Microsoft Excel - tasks.xls

File Edit View Insert Format Tools Data Window Help

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	A	B	C	D	E	F
	Area	Subtask	Owner	Priority	Exit	
4	Area	Subtask	Owner	Priority	Exit	
5	Network Game		Araik			
6		Voice over IP		2		
7		Client/Server Setup		2		
8		Explore DirectX Sample		2		
26	Specifications		Georg			
27		Story Board	Monica	0		
28		1Page Proposal	Georg	0		
29		Tech Discussior	Araik	2		
30		Presentation	Georg	2		
31		Project Website	Georg	2		
32		Software Design	Georg	2		
33	Graphics Engine		Georg			
34		Collision Detecti	Araik	2		
35		3D View Control	Georg	0		
36		Scene Graph	Georg	0		
37		Texture Mapping		1		
38		Lighting		1		
39		Smooth Shading	Georg	0		
40		Culling		2		
41		Level of Detail		2		
42		Land Tri-Patch	Georg	0		
43		Animation Vertex Transform		1		
49	Main Game		Araik			
50		Game State		0		
51		Game Time		0		
52		Game Init		0		
53		Game Control Loop		0		
54		Message Pump		0		
55		Threading Model		0		

Tasks Time Schedule Exit Criteria MO Tasklist

Ready

Refining initial task list to Excel Spreadsheet

Focus on your "Must Have" tasks first – there should only be a few

First Demos

- The first milestone of your project
- Complete most of the “must have” features so you can show your game play
- Program + some handwaving should be enough to convey a sense of how your game is going to work

Building your Team

- Is anyone still looking for teammates?



Building your Team

- Find people you like to work with: i.e. would I pull an all-nighter with these folks?
- Make expectations clear: What effort are you willing to put in? Do you want to participate in the competition? What grade are you shooting for?
- Are your ideas of a “fun game” compatible?
Bunnies vs. Blood and Gore, Puzzle vs. Adrenaline
- If you are unsure about the above, talk with your team or work by yourself

Finding Game Ideas

- Be open minded –even ideas you can't implement can be used to generate more
- How could we make this game fun to watch?
- How would my favorite film director approach this theme?
- How could the “essence” of a certain graphics technique be used in a game?
- I've always wanted to do “x” in real life but could not...
- Literature, photography, music, all contain interesting ideas...

Finding Game Ideas

- What is the “essence” of Quake? What is the “essence” of Civilization, Ago of Empires, Black and White?

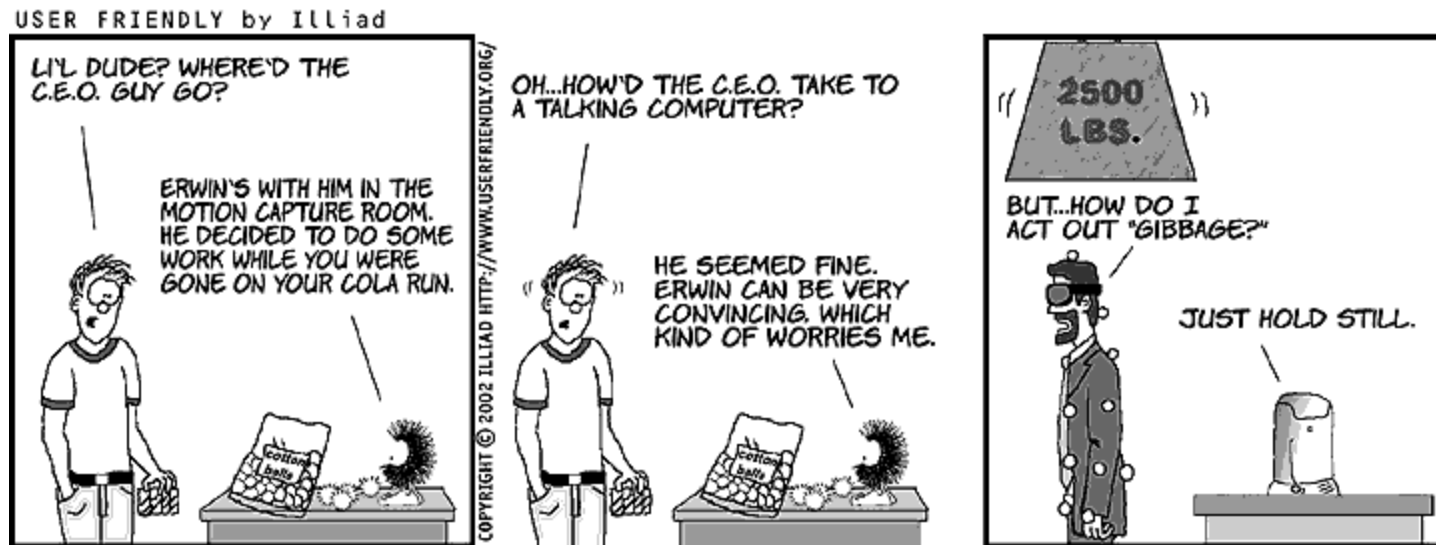


Lessons from the past

- Use source control – CVS, Visual Source Safe
- Test your code before checking it in
- Work in the same room if you can
- Have members read up relevant SDKs, techniques, websites and share the knowledge verbally with the team
- Make people experts and owners of areas so they can coordinate the work in that domain
- Build features on the side, test, test, test then integrate
- Think, talk, think, code, repeat is better than code, code, code,...
- Find the right tool for the task - Profiler vs. “printf and gettime”, 3DStudioMax vs. “emacs”

Lessons from the past

- Do something exciting to watch - go for the features that will impress people in 5 min. e.g., the perfect feel of control for a soccer kick probably won't come across in the demo, but if you have a screaming ambulance come on the field every time a player gets hurt, that's awesome
- Creating Artwork takes a lot of time – pilfer the web



Summary

- Game Proposal
 - 1 Page for staff, use it to bring your team on the same page – everyone should be able to describe the game from “start to game over”
- First Demo
 - First milestone – most “must have” feature for your gameplay should be done
- Final Demo
 - Show off your advanced features and wow the crowd
- Write Up
 - Get some sleep, submit code and readme, create a webpage if you entered in the competition

Questions

- Good luck and have fun – the course staff is eager to help
- cs248-tas@graphics.stanford.edu
- Check the website for new resources
- If you find interesting stuff, write a one-sentence summary and send it with link to the TAs – we will post it on the web for everyone